UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,424	08/19/2003	Joseph P. Fredrick	10020594-1	4523

7590 06/12/2007

AGILENT TECHNOLOGIES, INC.
Legal Department, DL429
Intellectual Property Administration
P.O. Box 7599
Loveland, CO 80537-0599

EXAMINER	
GORDON, BRIAN R	

ART UNIT	PAPER NUMBER
1743	

MAIL DATE	DELIVERY MODE
06/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/643,424	FREDRICK, JOSEPH P.	
	Examiner	Art Unit	
	Brian R. Gordon	1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *4-5-07*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-46* is/are pending in the application.

4a) Of the above claim(s) *19-28* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18 and 29-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I in the reply filed on April 03, 2007 is acknowledged. The traversal is on the ground(s) that Groups I and III should be a single group due to overlapping subject matter . This is persuasive hence claims 1-18 and 29-46 will be examined.

2. Claims 19-28 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claim Interpretation

3. In reference to claim 1, it should be noted the specified substrate is not positively claimed as an element of the invention. As presently drafted, the substrate is mentioned as element which the claimed device is intended to be employed therewith. Furthermore as to the fluid separation mechanism it appears as if applicant is relying upon the function as further limiting the mechanism element. However, as presently drafted the claim does not properly invoke 112 6th paragraph. In order do such the claim must me amended to proper means plus function format such as "a fluid separation means for". Other wise the recited function does not further limit the element. As presently drafted, it is only required that structure be present to allow for the relative separation of fluid and an unclaimed substrate (or any other object).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

While its recited the mechanism is for separating fluid from contact with the substrate, no fluid is claimed as being present with contact with the substrate unclaimed substrate. The substrate must be positively claimed as an element of the device.

6. Claim 1 recites the limitation "the fluid meniscus" in (c). There is insufficient antecedent basis for this limitation in the claim. It was not previously established that a fluid is present in the device and the fluid has a meniscus. Where is the fluid and meniscus thereof located. Is the substrate submerged in a fluid in the chamber? Does a layer, film, etc. of fluid coated on all surfaces of the substrate?

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 5-12, 15-18, 29-30, 32-34, 36, and 45 are rejected under 35 U.S.C. 102(e) as being anticipated by Loeffler et al. US 6,673,620.

Loeffler et al. disclose a sample chamber is formed by a housing sealed against a microscope slide. The housing has fluid ports, including a well formed over at least one port. In a rinse station, rinse solution is drawn from a reservoir through the chamber to a waste reservoir. At a fill station, an aliquot of reagent already placed in the well is driven into the chamber. The reagent may be driven into the chamber by first drawing a vacuum on the chamber through the aliquot of reagent and then releasing the reagent to be drawn into the chamber by the vacuum (abstract).

In embodiments of the present invention, a fluid handling apparatus is capable of spreading small amounts of liquid reagent over a flat surface, such as a microscope glass slide. The reagent may be sealed within a confined cavity, or "chamber", so as to prevent evaporation even with heating of small amounts of reagent during an incubation period. One surface of this chamber is the flat slide surface. The remaining surfaces are formed by a cell. The cell is preferably a plastic disposable part that fits on top of the slide, over the area containing the tissue, biologic cells, or array mounted on the glass slide. The cell forms a fluid seal to the surface of the glass by means of a gasket. The gasket is mounted in a recess on the face of the cell that mates with the glass slide.

In another method of fluid injection, reagent is placed into the reagent well, as before. A fluid injector is positioned above the fluid inlet port. In addition, the fluid aspirator is positioned above the fluid outlet port. The valves of both fluid ports are opened by this process. Reagent is then pushed into the chamber by a burst of air pressure. The transient, high-pressure reagent injection avoids entrapping bubbles by forcing laminar flow of reagent through the chamber. Once the reagent completely fills

the chamber, the pressure is removed and the valves are closed by disengaging the fluid injector and fluid aspirator.

Thus, in accordance with one aspect of the invention, an apparatus (fluid separation mechanism) for adding and removing liquid reagents to and from a sample comprises a flat surface supporting the sample and a chamber forming a cavity on the flat surface, the chamber being releasably sealed to the flat surface. Fluids can be added or removed through a fluid port in the wall of the chamber. A source of negative or positive air pressure is provided in a conduit, and an actuator is able to move the fluid port and conduit relative to each other to engage the conduit and fluid ports to each other so that the two are in fluid communication.

FIG. 11 is a perspective representation of an instrument 43 that incorporates positions for eight slides. The instrument 43 is shown with ISH cells in each of the eight positions. Each of the hinged covers 17 is clamped downwards underneath the latch 15. A heater controller pad 45 is located on the front panel of the instrument 43. The heater controller (temperature controller) pad allows someone using the instrument 43 to enter a desired temperature to which the heaters will be heated.

9. Claims 1-10, 16-18,, 29-36, and 45 are rejected under 35 U.S.C. 102(b) as being anticipated by McGrath et al. US 5,192,503.

McGrath et al. discloses an automated assay analysis method and a probe clip for in situ assay of tissue sections in the form of a plate having a first seal member mounted thereon and forming an interior cavity on the plate. In one embodiment, a second seal member is mounted interiorly of the first seal member and divides the

interior cavity into first and second fluid communicatable surfaces, with a probe dryingly attached to the plate and disposed on the second mixing surface. The plate is joined to a slide carrying a tissue section and a reactant fluid such to form fluid communicatable reaction and mixing chambers. Successive rotations of the joined plate and slide causes the reactant fluid to initially flow to the mixing chamber and release the probe, before the probe flows to the reaction chamber for reaction with the tissue section. In another embodiment, a time-release material covers the probe mounted on a plate having a single chamber. The reactant fluid hydrolyzes the time-release material to release the probe for reaction with the tissue. The cassette carrying one or more plates is slidingly insertable into a semi-closed housing containing one or more tissue-carrying slides. Clamps urge the probe clip cassette and the individual plates into engagement with the slides to form the sealed chambers therebetween. Inlet and outlet wash ports communicate with the slides to wash the slides after the plates have been removed from the housing (abstract).

The wash means includes an inlet port 178 and an outlet port 180 associated with each receptacle in the case 73, as shown in FIG. 3 and in greater detail in FIG. 9. Each inlet port 178 and outlet port 180 extends through the front wall 130 of the case 73. The inlet port 178 comprises a hollow tube or conduit which opens into the interior of the case 73 in each receptacle. The inlet port 178 is positioned below the slide support members 152 mounted on the base of the case 73. The slide support members 152 extend above the bottom of the case 73 and define a chamber 176 below the slide 50 mounted on the slide support members 152.

The outlet port 180 is connected to a conduit 182 which extends through the case 73 and terminates adjacent the back wall 128. The terminal end of the conduit 182 opens to the interior of the case 73 in the receptacle so as to receive fluid from above and below the slide 50 mounted on the slide receiving members 152. In this manner, all of the fluid within each receptacle may be removed by tilting or disposing the case 73 vertically with the front wall 130 being positioned in a downward facing direction or by applying a vacuum or suction force to the outlet port 180 to draw all the fluid from the receptacle (separation mechanism). In this manner, the slide 50 in each individual receptacle in the case 73 may be individually washed so as to remove all traces of unreacted probe from the tissue 52 mounted on the slide 50 without contaminating adjacent samples (column 11, lines 51+).

10. Claims 1-7, 17-18, 29-31, and 45 are rejected under 35 U.S.C. 102(b) as being anticipated by Takeuchi, US 4,738,824.

Takeuchi discloses an automatic dyeing apparatus M for dyeing specimens such as tissue or cell has a casing 1, in the upper portion of which a horizontal main table 2 is provided for disposing regularly many vessels v, v, . . . v thereon, each containing a kind of liquid such as reagent and water for dyeing specimens. Each vessel v has an open top face through which a specimen cage 3 for supporting many pieces of slide glass with specimens is immersed into the reagent or water of each vessel v. On the upper face of the casing 1 is provided a specimen cage transporting mechanism T (separating mechanism) for transporting specimen cages into the respective vessels v. The mechanism T has a first slide body 4 extending laterally over the vessels v arranged on

the main table 2 and the first slide body 4 is moved in the longitudinal direction (X direction) of the casing 1 while its opposite ends slide on respective guide rails 5, 5. Further, the first slide body 4 has a second slide body 6 extending vertically which is moved along the first slide body 4 in the lateral direction (Y direction) of the casing 1. The second slide body 6 has a support head 7 for supporting a specimen cage and the support head 7 is moved vertically along the second slide body 6 in the vertical direction (Z direction). The two slide bodies 4, 6 have two slits 4a, 6a formed on one side wall of their respective casings and one end of the first slide body 4 is moved along a slit 8a provided in an upper casing 8 which is formed on the back side of the upper portion of the casing 1. The casing 1 accommodates a plurality of reagent tanks 9a, 9b, . . . , 9e at its bottom (column 2, lines 21+).

In both groups, 1 and 2, the vessels have two inlets 23, 24, respectively, through which xylene in a tank 9a is supplied into the respective via a pump 25, two valves 26, 26 and two nozzles 27, 27 for adjusting flow rate of xylene. The vessels have two outlets 28, 28 for discharging used xylene.

In case that a plurality of dyeing reagents are used, a washing process must be carried out between the immersions of a dyeing reagent and a next dyeing reagent. After the specimen is dyed in the dyeing reagent, the specimen is washed by the normal water and/or the distilled water.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 11-15, 37-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over McGrath et al.

McGrath et al. does not disclose the device as including a temperature controller for heating and cooling.

McGrath et al. does teach A probe denoted by reference number 40 is releasably applied to the raised surface 14 on the mixing chamber surface 34 of the plate shown in

FIG. 1 by suitable means, such as freeze -drying, etc. The probe 40 comprises any suitable antibody or nucleic acid used for reacting with tissue sections to mark and bind with message RNA or protein in a tissue section or cell to identify and quantify the macromolecule in the tissue section for subsequent analysis. By way of example, the probe 40 may be freeze-dried on the mixing chamber surface 34 in a 10 ul drop which can be efficiently re-wetted and released from the surface 34 so as to mix with a reactant fluid or blocking buffer, as described hereafter. Thus, the probe 40 is placed on the probe clip 10 in a dry, rewettable state. This allows the probe clip 10 to be prepared in advance for interchangeable use with tissue sections in performing in situ assays of such tissue sections. A probe denoted by reference number 40 is releasably applied to the raised surface 14 on the mixing chamber surface 34 of the plate shown in FIG. 1 by suitable means, such as freeze -drying, etc. The probe 40 comprises any suitable antibody or nucleic acid used for reacting with tissue sections to mark and bind with message RNA or protein in a tissue section or cell to identify and quantify the macromolecule in the tissue section for subsequent analysis. By way of example, the probe 40 may be freeze-dried on the mixing chamber surface 34 in a 10 ul drop which can be efficiently re-wetted and released from the surface 34 so as to mix with a reactant fluid or blocking buffer, as described hereafter. Thus, the probe 40 is placed on the probe clip 10 in a dry, rewettable state. This allows the probe clip 10 to be prepared in advance for interchangeable use with tissue sections in performing in situ assays of such tissue sections.

It would have been obvious to one of ordinary skill in the art at the time of the invention to recognize the device maybe modified to include a temperature controller device to achieve the freezing and incubation of the slides as required by the method disclosed by McGrath et al.

As to the wedge and flexible members, McGrath et al. further states it would also be desirable to provide an in situ assay apparatus in which the reaction chamber has sufficient vertical space between a cover slide and the tissue carrying slide to reduce friction for complete reactant mixing.

After the completion of primary incubation, the tensioning means is released so as to enable the probe clip cassette 70 to move to a first position spacing the individual probe clips 10 from their corresponding slides 50.

It would have been obvious to one of ordinary skill in the art at the time of the invention to recognize wedges may be employed within the device of McGrath et al. in order to achieve the desired vertical space. It would further been obvious to one ordinary skill in the art to recognize the automated device may be incorporated into a network including computers which may be employed for data storage, analysis, and subsequent transmission of such data.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Brown, James F.; Clarke, Mark S.F. et al.; Desmond; Sean M. et al.; Thiem; Stefan; Chu; Wei-Sing; Chu; Wei-Sing; Aghassi; Nora B. et al.; Bogen; Steven A.; Cuomo; Carlo et al.; Kuhn; Gunther; Koebler; Douglas J. et al.; Levin;

Andrew E.; Shea; Laurence R. et al.; Shea, Laurence R. et al.; Richards; William L. et al.; Wheatcroft; Roger George Laurence; Reinhardt, Kurt et al.; Cosby; N. Guy et al.; Thiem; Stefan et al.; Atwood; John G. et al.; Parce; John W. et al.; Schembri; Carol T. et al.; Jones; Aaron C. et al.; Pressman, Norman J. et al.; Santarsiero; Bernard D. et al.; and Winther; Lars et al. disclose substrate processing devices.

16.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian R. Gordon whose telephone number is 571-272-1258. The examiner can normally be reached on M-F, Telework Thurs., 1st Fri. Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Brian R Gordon

Primary Examiner
Art Unit 1743

brg

BRIAN R. GORDON
PRIMARY EXAMINER